ABSTRACT

EFFECT OF SODIUM ALGINATE POLYMER ON PHYSICAL CHARACTERISTICS OF CIRPROFLOXACIN HCl-ALGINATE MICROSPHERES

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The aim of this research was to examine the effect of sodium alginate concentrations on the characteristic of microspheres. Ciprofloxacin HCl-alginate microspheres were made by ionotropic gelation method using aerosolization technique with sodium alginate (1,5 %; 2% and 2,5%) as polymer and $CaCl_2$ (1,5 M) as *crosslinker*. Michrospheres formed was resuspended into the solution of lyoprotectant maltodextrin and was dried using freeze dryer.

Results on the characteristics of microspheres included particle morphology, particle size, moiture content, swelling index, drug loading, entrapment efficiency, and yield. Results showed that particle size of ciprofloxacin HCl-alginate microspheres were F1 (1,89 ± 0,32) µm; F2 (2,19 ± 0,08) µm; and F3 (2,2 ± 0,17) µm. Results showed that drug loading microspheres were F1 (3,79 ± 0,30) %, F2 (3,92 ± 0,12) %, and F3 (4,05 ± 0,08) %. The result of entrapment efficiency were F1 (37,07 ± 4,67) %, (42,73 ± 2,34)%, and (43,53 ± 2,42) %. Yield of F1, F2, and F3 were (60,29 ± 4,53)%, (64,59 ± 2,02)%, and (65,74 ± 5,67)% respectively. Swelling index measured based on mass and particle size of Ciprofloxacin HCl-alginate microspheres of all formulas showed index value of less than 10.

The result of particle size, moisture content, drug loading, entrapment efficiency, and yield were analyzed statistically using factorial design ANOVA, it was found that increasing sodium alginate concentration did not affect particle size, drug loading, entrapment efficiency, and yield of ciprofloxacin HCl-alginate microspheres.

Keywords : Ciprofloxacin HCl-Alginate, microspheres, aerosolization, characteristics, sodium alginate